# CHAPTER 8
# COMBAT SUPPORT

*The battalion commander is responsible for effective combat support. Mortars, artillery, air defense artillery, combat engineers, and aviation assets provide CS for the platoon. The battalion commander decides how to employ assets based on his estimate of the situation. He attaches supporting elements to the SBCT infantry reconnaissance platoon, or he places CS elements under operational control, in direct support, or in general support of the platoon. The reconnaissance platoon leader must know the employment considerations and abilities of all CS assets.*

## Section I. FIRE SUPPORT

Fire support is the collective and coordinated use of indirect fire weapons and armed aircraft in support of the battle plan. Fire support assets include mortars, field artillery cannons and rockets, Army aviation, close air support, and naval surface fire support. Support can be lethal or non-lethal (smoke or illumination). Indirect fire support procedures do not change significantly with the infantry carrier vehicle- (ICV) equipped infantry battalion except that fire support should be more responsive. Additionally, the mortars organic to the battalion provide the earliest and most responsive fires to the reconnaissance platoon.

### 8-1. FIRE PLANNING

Digitization improves the reconnaissance platoon's ability to conduct fire support planning. The platoon leader receives the battalion indirect fire plan on his CTD as soon as the battalion FSO enters it into the database on his hand-held terminal unit (HTU). No longer must the reconnaissance platoon leader wait until the final OPORD is issued to receive the fire support overlay.

a. The platoon leader calls up the operational graphics and the latest enemy situational graphics to aid with his planning, enters the platoon's proposed targets into his CTD, and forwards them to the battalion FSO. The FSO reviews the proposed targets with the battalion S3. The S3 accepts, rejects, or adjusts the platoon leader's proposed targets and forwards to the battalion commander for his approval.

(1) If the battalion commander accepts or adjusts the targets, he incorporates them into the battalion fire support plan and forwards the targets to the *brigade* FSO.

(2) It is the FSO's responsibility to clean up the digital fire support graphics. The FSO ensures only valid targets remain on the digital fire support graphics.

b. Once the battalion and company finalize the targets, the battalion FSO puts out a net call to inform the platoon leader that the fire support graphics are finalized. All leaders must review the digital fire support graphics so they are familiar with any changes and to ensure graphics are updated for subsequent fire missions

c. Fire support planning is conducted concurrently with maneuver planning at all levels. Battalions typically use top-down fire support planning with bottom-up refinement of the plans. The battalion commander develops guidance for fire support in terms of task and purpose. In turn, the fire support planner determines the method to be used in

accomplishing each task. He also specifies an end state that quantifies task accomplishment.

d. Individual fire support assets incorporate assigned tasks into their fire plans. Units tasked to initiate fires must refine and rehearse their assigned task. This means the platoon leader refines the platoon's assigned portion of the fire support plan to ensure the designated targets will achieve the intended purpose. He also conducts rehearsals to prepare for the mission and, as specified in the plan, directs the platoon to execute its assigned targets.

## 8-2. LINKING FIRE SUPPORT TASKS AND MANEUVER PURPOSE

A clearly defined maneuver purpose enables the maneuver commander to articulate precisely how he wants indirect fire to affect the enemy during different portions of the battle. This in turn allows fire support planners to develop an effective plan to support the intended purpose. They can determine each required task (in terms of effects on target), the best method for accomplishing each task (in terms of a fire support asset and its fire capabilities), and a means of quantifying accomplishment.

A carefully developed method of fire is equally valuable during execution of the fire support mission; it assists not only the firing elements but also the observers responsible for monitoring the effects of the indirect fires. With a clear understanding of the intended effects, fire support assets and observers can work together effectively, planning and adjusting fires as necessary to achieve the desired effects on the enemy. The following paragraphs describe several types of targeting effects associated with fire support tasks.

a. **Final Protective Fire Planning.** Final protective fires (FPFs) are designed to create a final barrier, or "steel curtain," to prevent a dismounted enemy from moving across defensive lines. They are fires of last resort and take priority over all other fires. The employment of FPFs presents several potential problems. They are linear fires, with coverage dependent on the firing sheaf of the fire support asset(s). In addition, while FPFs may create a barrier against penetration by enemy infantry, armored vehicles may simply button up and move through the fires into the friendly defensive position. FPFs are planned targets with a clearly defined purpose. FPF planning is normally delegated to the company that is allocated the support.

b. **Target Refinement.** The platoon leader is responsible for employing indirect fires in his zone or sector. The most critical aspect of this responsibility is target refinement, in which he makes changes to the fire support plan to ensure targets accomplish the battalion commander's intended battlefield purpose. Rather than merely executing targets without regard to the actual enemy situation, the platoon leader must be ready to support the commander's intent by adjusting existing targets or nominating new targets that will allow engagement of specific enemy forces.

c. **Fire Support Preparation.** As noted, although the battalion commander establishes target tasks and purposes and allocates appropriate fire support assets, the platoon leader must ensure execution of assigned targets. Successful execution demands detailed preparation that focuses on areas covered in the following paragraphs.

(1) ***Observation Plan.*** In developing the observation plan, the platoon leader must ensure both a primary observer and an alternate observer for redundancy to cover all targets. The plan must provide clear, precise guidance for the observers. Positioning is perhaps the most important aspect of the plan.

(a) Observers' positions must allow them to see the trigger for initiating fires as well as the target area and the enemy forces on which the target is oriented. The platoon leader also must consider other aspects of observer capabilities including available equipment, communication, and security of the teams.

(b) In addition to providing the specific guidance outlined in the observation plan, the platoon leader must ensure each observer understands the target task and the purpose. For example, observers must understand that once the first round impacts, the original target location is of no consequence. They must orient on the targeted enemy force to ensure that fires achieve the intended battlefield purpose.

(2) ***Rehearsals***. The platoon leader is responsible for involving his observers in platoon- and battalion-level rehearsals. He also should use rehearsals to ensure the platoon's primary and backup communications systems adequately support the plan.

(3) ***Target Adjustment.*** In the defense, the commander should confirm target location by adjusting fires as part of engagement area development.

## Section II. INDIRECT FIRE SUPPORT

The main indirect fire support available to the reconnaissance platoon includes mortars and field artillery (Table 8-1, page 8-4). This section discusses the responsibilities, considerations, and procedures for employing all the indirect-fire assets supporting the platoon. (FM 6-30 discusses in detail how to call for and adjust indirect fires.)

| CALIBER: | 60-mm | 81-mm | 81-mm (im-proved) | 120-mm | 105-mm | 155 -mm | 155-mm |
|---|---|---|---|---|---|---|---|
| MODEL: | M224 | M29A1 | M252 | M285 | M119 | M198 | M109A6 |
| MAX RANGE (HE)(m): | 3,490 | 4,595 | 5,608 | 7,200 | 14,000 | 18,100 | 18,100 |
| PLANNING RANGE (m): | | | | | 11,500 | 14,600 | 14,600 |
| PROJECTILE: | HE, WP, ILLUM, | HE, WP, ILLUM, | HE, WP, ILLUM, RP | HE, SMK, ILLUM, | HE M760 ILLUM, HEP-T, APICM, CHEM, RAP | HE, WP, ILLUM, SMK, CHEM, NUC, RAP, FASCAM, CPHD, AP/ DPICM | HE, WP, ILLUM, SMK, CHEM, NUC, RAP, FASCAM, CPHD, AP/ DPICM |
| MAX RATE OF FIRE: | 30 RPM for 1 MIN | 30 RPM FOR 1 MIN | 30 RPM for 2 MIN | 15 RPM for 3 MIN | 6 RPM for 1 MIN | 4 RPM for 1 MIN | 4 RPM for 1 MIN |
| SUSTAINED RATE OF FIRE (rd/min): | 20 | 8 | 15 | 5 | 3 | 2 | 2 |
| MINIMUM RANGE (m): | 70 | 70 | 83 | 180 | DIRECT FIRE | | |
| FUZES: | MO | PD, VT, TIME, DLY | PD, VT, TIME, DLY | MO | PD, VT, MTSQ, CP, MT, DLY | PD, VT, CP, MT, MTSQ, DLY | PD, VT, CP, MT, MTSQ, DLY |

**LEGEND:**

AP - Armor Piercing
APICM - Antipersonnel Improved Conventional Munitions
CHEM - Chemical
CP - Concrete Piercing
CPHD - Copperhead
DLY - Delay
DPICM - Dual Purpose Improved Conventional Munitions
FASCAM - Family of Scatterable Mines
HE - High Explosive
HEP-T - High Explosive Plastic Tracer
ILLUM - Illumination
MIN - Minute
MO - Multioption - VT, PD, DLY
MT - Mechanical Time
MTSQ - Mechanical Time Super Quick
NUC - Nuclear
PD - Point Detonating
RAP - Rocket Assisted Projectile
RD - Round
RP - Red Phosphorus
RPM - Rounds per Minute
SMK - Smoke
TIME - Adjustable Time Delay
VT - Variable Time
WP - White Phosphorus

**Table 8-1. Indirect fire weapons capabilities.**

## 8-3. FIRE-PLANNING PROCESS

The fire-planning process begins at higher echelons and continues down through the company FSOs and other key personnel, to include the reconnaissance platoon leader. The effectiveness of this process depends on continuous interaction and feedback from the lower echelons upward. Key functions include refinement and confirmation of target locations and execution of events. Specific responsibilities include those listed on the fire support execution matrix. The matrix shows the leader who bears responsibility for each

target, when the responsible party should execute the target, and what means (artillery, mortars, CAS) he or they should use. Table 8-2 shows an example of a battalion fire support execution matrix. It shows maneuver elements along the left side and the different phases of the mission along the top. It shows the platoon's role throughout the operation. The preparer should always include the platoon as a subunit in the matrix.

| **EVENT SUPPORT DATA** | **EVENT I** (LD to SBF 01) | **EVENT II** (Set conditions for breach from SBF 01) | **EVENT III** (B Company breach) | **EVENT IV** (C Company assault) |
|---|---|---|---|---|
| **TARGET/ GRID** | AE0001 (PK 10184938). | AE0002 (PK 09005031). | O/O shift AE0001 to AE0003 (PK 10204810) and lift AE0002. | O/O lift AE0003. |
| **ASSET** | 155-mm HE. | Mortar smoke. | 155-mm. | 155-mm. |
| **OBSERVER/ BACKUP** | Recon platoon will initially call for and adjust fires; FSO adjusts upon arrival at SBF; 1st platoon leader is backup. | FSO (primary)/ 1st platoon leader (backup). | AE0003: FSO (primary)/ 2d platoon leader (backup). | FSO (primary)/ 3d platoon leader (backup). |
| **TRIGGER** | C Company crosses PL LYNX. | On-call at SBF. | B Company crosses PL LION. | C Company completes consolidation on OBJ BOB. |
| **PURPOSE** | Disrupt enemy on OBJ BOB to facilitate maneuver of A Company to SBF position. | Obscure enemy to prevent interference with B Company's breach. | Disrupt MRB reserve to protect the assault force (C Company). | Protect the assault force (C Company). |

**Table 8-2. Example of a battalion fire support matrix.**

## 8-4. CALL FOR FIRE

The battalion fire support execution matrix may require the platoon to call for and adjust its own indirect fire support. The matrix also might designate platoon targets. The platoon uses these preplanned artillery targets to call for and adjust indirect fire. Either a soldier or an FO can prepare and request a call for fire. However, to receive immediate indirect fire support, the observer must plan targets and follow proper call-for-fire procedures. If available, he should use a GPS and laser range finder. The call for fire must include certain elements and might include others.

a. **Required Elements.** Calls for fire must include--

(1) ***Observer Identification and Warning Order***. Observer identification tells the FDC who is calling. It also clears the net for the duration of the call. The warning order tells the FDC the type of mission and the method of locating the target. The types of indirect fire missions are--

- Adjust fire--Use this command when uncertain of target location.
- Fire for effect--Use this command for rounds on target; no adjustment.
- Suppress--Use this command to obtain fire quickly.
- Immediate suppression--Use this command to indicate the platoon is already being engaged by enemy; must give target identification.

(2) ***Target Location Methods.*** The observer sends the target location as six digits (letters and numbers). Before the first adjusting rounds are fired, the observer gives the direction in mils. The FDC must know the observer's exact location. The observer sends observer-target (OT) direction (to the nearest 10 mils) from his position to the target. He specifies which target location method to use:

- Grid (Figure 8-1).
- Polar (Figure 8-2).
- Shift from a known point (Figure 8-3).
- Range shifts and lateral shifts (Figure 8-4).

| INITIAL FIRE REQUEST | |
|---|---|
| **Observer** | **FDC** |
| Z57, This is 271, Adjust Fire, Over. | This is Z57, Adjust Fire, Out. |
| Grid NK180513, Over. | Grid NK180513, Out. |
| Infantry Platoon in the open, ICM in effect, Over. | Infantry Platoon in the open, ICM in effect, Over. |
| **MESSAGE TO OBSERVER** | |
| **FDC** | **Observer** |
| Z, 2 rounds, Target, AF1027, Out. | Z, 2 rounds, Target is AF1027, Over. |
| Direction 1680, Out. | Direction 1680, Over. |
| **NOTE:** ***Send direction before or with the first subsequent correction.*** | |

**Figure 8-1. Example fire mission (grid).**

| INITIAL FIRE REQUEST | |
|---|---|
| **Observer** | **FDC** |
| Z56, This is Z31, Fire for effect, Polar. Over. | This is Z56, Fire for effect, Polar, Out. |
| Direction 4520, Distance 2300, Down 35, Over. | Direction 4520, Distance 2300, Down 35, Over. |
| Infantry Company in the open, ICM, Over. | Infantry Company in the open, ICM, Over. |
| **MESSAGE TO OBSERVER** | |
| **FDC** | **Observer** |
| Y, VT, 3 rounds, Target, AF2036, Out. | Y, VT, 3 rounds, Target, AF2036, Over. |

**Figure 8-2. Example fire mission (polar plot).**

| INITIAL FIRE REQUEST | |
|---|---|
| **Observer** | **FDC** |
| H66, This is H44, Adjust Fire, Shift AA7733, Over. | This is H66, Adjust Fire, Shift AA7733, Out. |
| Direction 5210, Left 380, Add 400, Down 35, Over. | Direction 5210, Left 380, Add 400, Down 35, Out. |
| Combat OP in open, ICM in effect, Over. | Combat OP in open, ICM in effect, Out. |
| **MESSAGE TO OBSERVER** | |
| **FDC** | **Observer** |
| H, 1 round, Target AA7742, Over. | H, 1 round, Target AA7742, Out. |
| **NOTE:** *Shift from a known point is performed when the observer and FDC have a common known point. The observer sends OT line, then determines the lateral and range shifts.* | |

**Figure 8-3. Example fire mission (shift from a known point).**

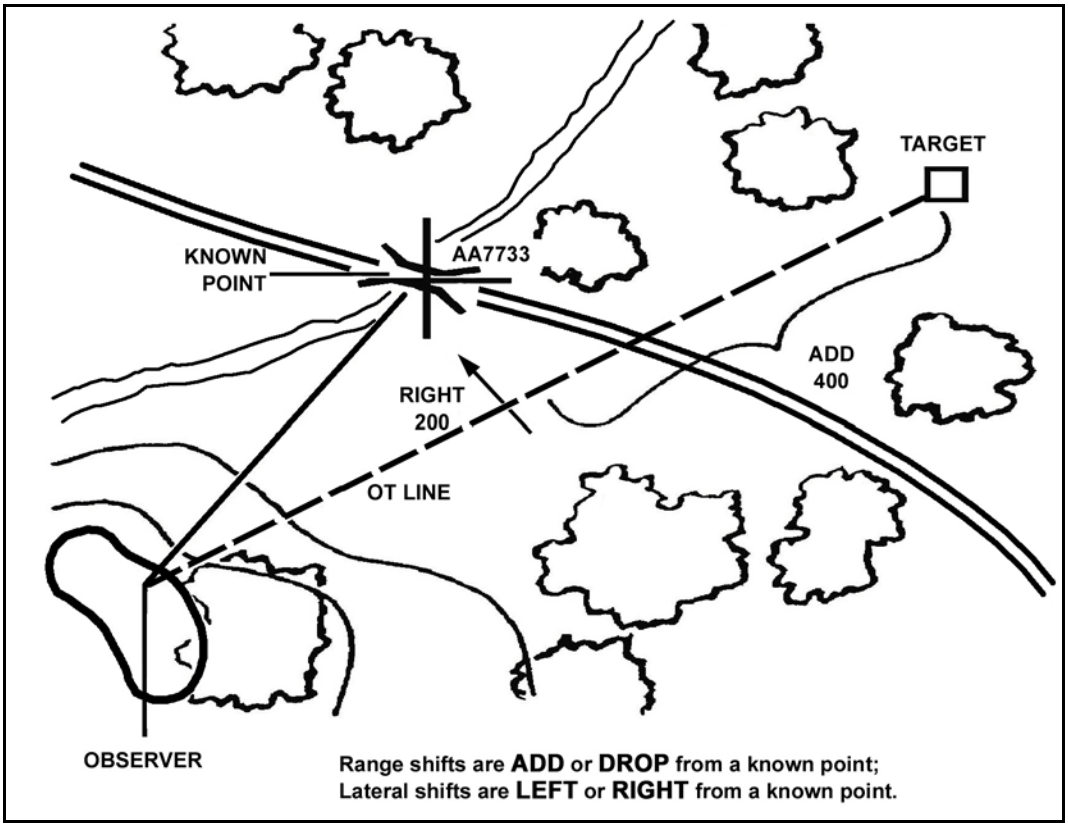



**Figure 8-4. Lateral and range shifts.**

(3) ***Target Description.*** Give a brief description of the target using the acronym "SNAP":

- Size and or Shape.
- Nature and or Nomenclature.
- Activity.
- Protection and or Posture.

b. **Optional Elements.** A call for fire also might include the following information:

(1) ***Method of Engagement.*** The method of engagement consists of danger-close (if applicable) and distribution, ammunition, and trajectory (DAT).

(2) ***Method of Fire and Control.*** The method of fire and control indicates the desired manner of attacking the target, whether the observer wants to control the time of delivery of fire and whether he can observe the target. The observer announces methods of fire and control:

- At My Command--fire at observer's command.
- When Ready--standard method of fire control.
- Cannot Observe--fire will not be observed.
- Time on Target--rounds land at specified time.
- Continuous Illumination--FDC determines when to fire.
- Coordinated Illumination--observer determines when to fire.
- Cease Loading--used when two or more rounds are in effect (causes loader to stop loading).
- Check Firing--temporary halt in firing.
- Continuous Fire--will continue to fire unless told to stop.
- Repeat--will repeat last data fired by the firing unit.

(3) ***Refinement and End of Mission.*** The observer should observe the results of the fire for effect (FFE) and then take whatever action is necessary to complete the mission:

- Correct any adjustments.
- Record as target.
- Report battle damage assessment.

(4) ***Danger-Close.*** Danger-close information is included when applicable:

- Field artillery and mortars--Danger-close target is within 600 meters of friendly troops.
- Naval gunfire--Danger-close target is within 750 meters when using 5-inch or smaller guns (1,000 meters for larger naval guns).
- Method of adjustment--During danger-close missions, the FO uses only the creeping method of adjustment (corrections of no more than 100 meters).

## 8-5. ADJUST FIRE

Once he calls for fire, the observer adjusts the fire onto the target. If he has accurately located the target, he requests fire for effect. If the observer cannot locate the target (because of deceptive terrain, lack of identifiable terrain features, poor visibility, or an inaccurate map), he adjusts the impact point of the rounds. One artillery piece or mortar adjusts fire. The observer chooses an adjusting point: for a destruction mission (precision fire), the target is the adjusting point; for an area target (area fire), the observer picks a well-defined adjusting point close to the center. The observer spots the first and each

successive adjusting round, and he sends range and deviation corrections back to the FDC until rounds hit the target. The observer spots by relating the round's point of impact to the adjusting point. (See FM 6-30 for a more detailed discussion of adjusting mortar and artillery fire.)

a. **Deviation Spotting.** Deviation (left or right) spotting involves measuring the horizontal angle (in mils) between the burst and the adjusting point (Figure 8-5). A burst to the right (left) of the target is spotted as "(so many) mils right (left)." The observer uses an angle-measuring device to determine deviation. He might use the mil scale on his binoculars (Figure 8-6) or his fingers and hand (Figure 8-7, page 8-10).

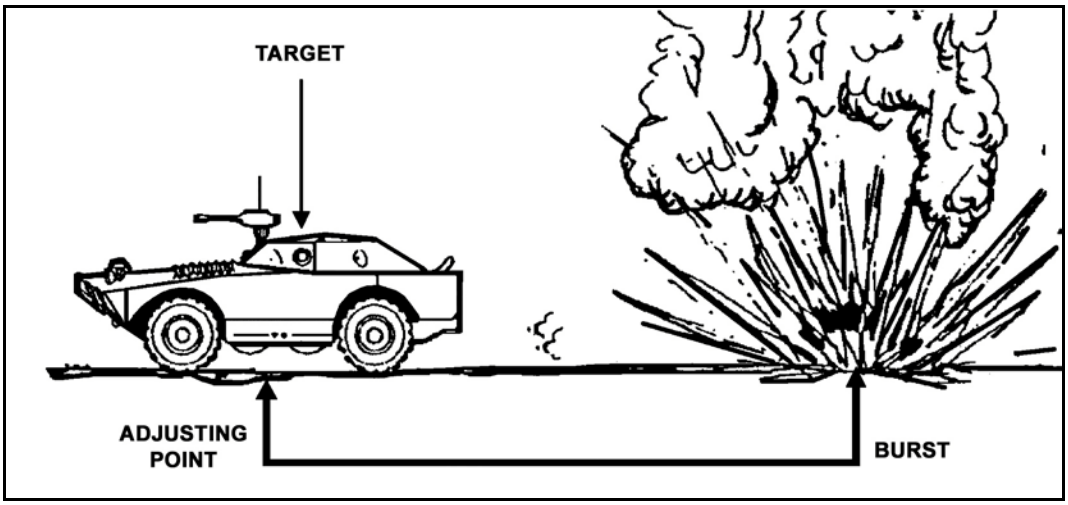



**Figure 8-5. Deviation spotting.**

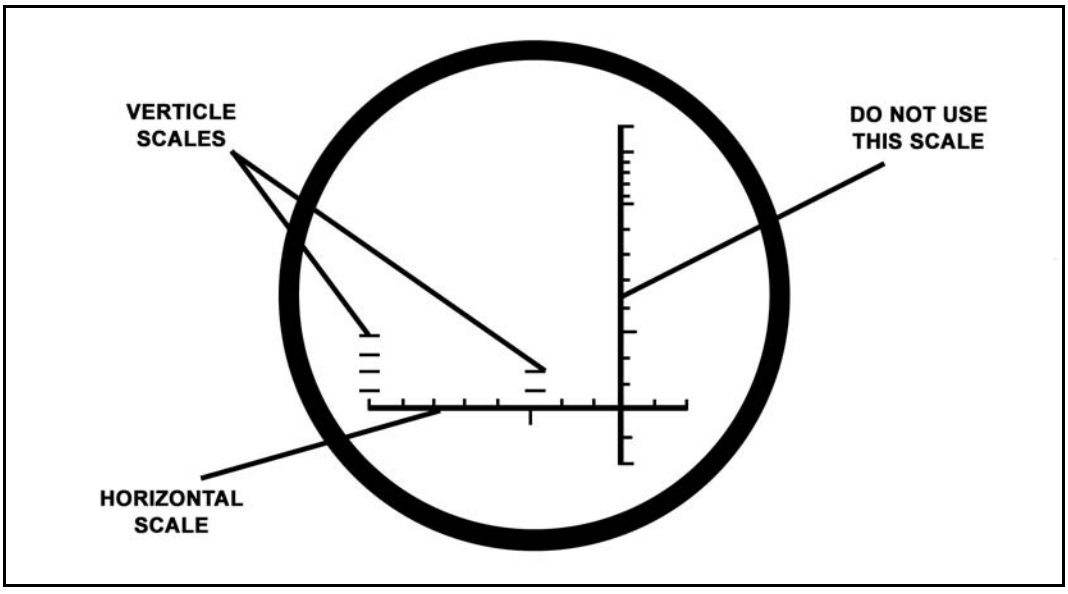



**Figure 8-6. Mil scale on M17 binoculars.**

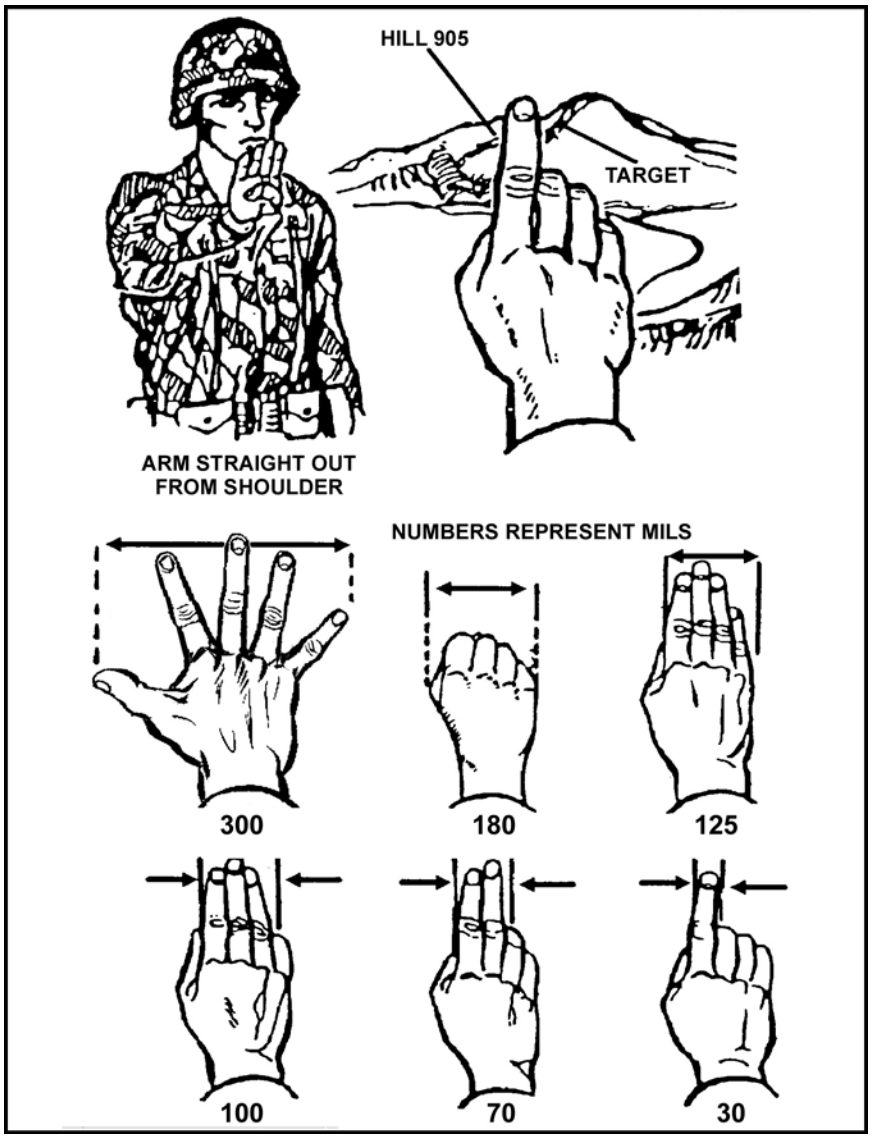



**Figure 8-7. Hand and fingers used to determine deviation.**

(1) On binoculars, the horizontal scale is divided into 10-mil increments and is used for measuring horizontal angles. The vertical scales in the center and on the left of the reticle are divided into 5-mil increments and are used for measuring vertical angles. The scale on the right, if present, is no longer used.

(2) A burst on the OT line is spotted as "line." Deviation (left or right) should be measured to the nearest 5 mils for area targets, with measurements taken from the center of the burst. Deviation for a destruction mission (precision fire) is estimated to the nearest mil. (Figure 8-8 shows the adjusting point at the center of the binocular horizontal scale.)

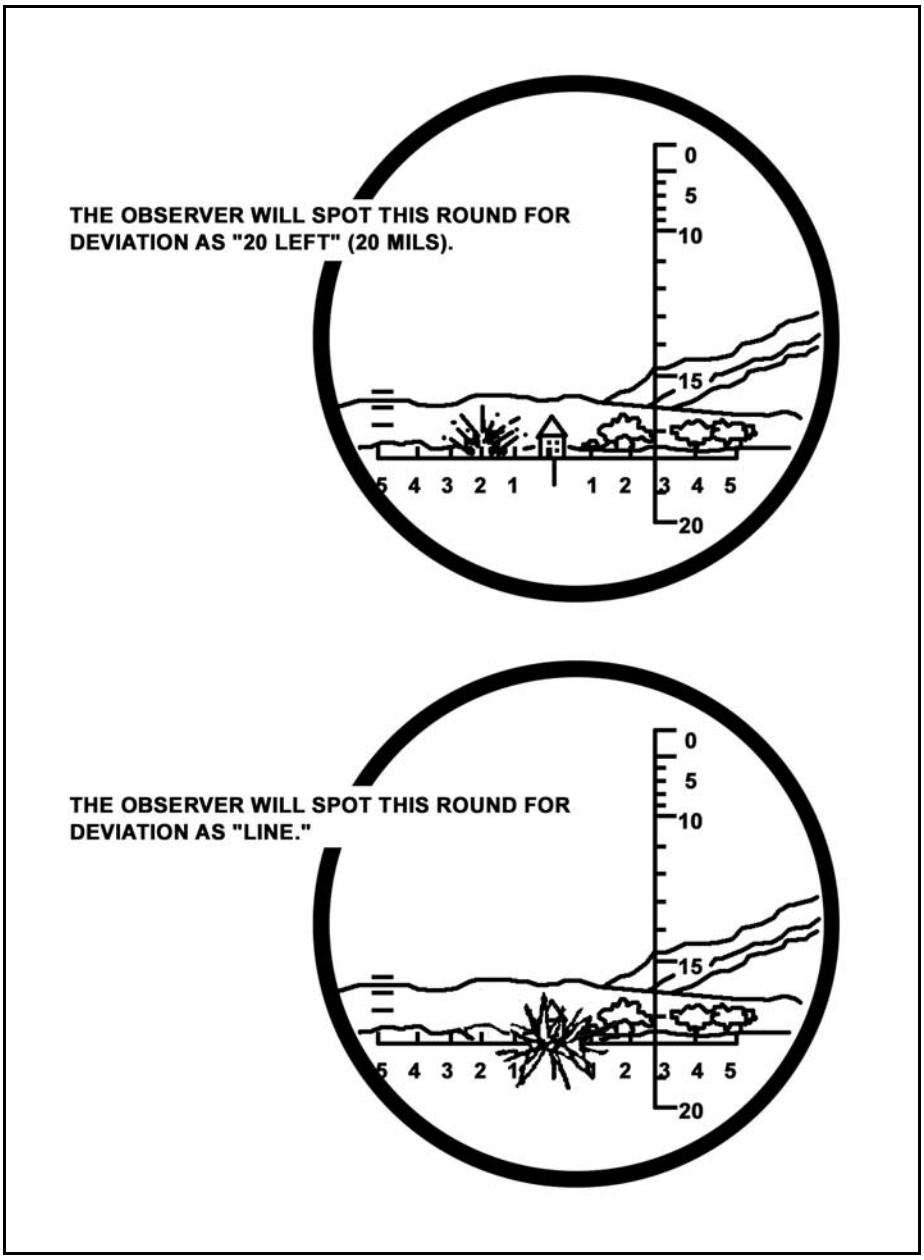



**Figure 8-8. Deviation spotting with binoculars.**

b. **Deviation Correction.** Deviation correction is the distance (in meters) the burst must be moved left or right to be on line between the observer and the target. Once the mil deviation has been determined, the observer converts it into a deviation correction (in meters). He sends it to the FDC either when sending the range correction for the next adjusting round or when calling for fire for effect.

(1) The deviation correction is determined by multiplying the observed deviation in mils by the distance from the observer to the target in thousands of meters (the OT factor). The result is expressed to the nearest 10 meters (see Example 1 on page 8-12). A minor deviation correction (10 to 20 meters) should be made in adjustment of precision fire.

(2) In adjustment of area fire, small deviation corrections (20 meters or less) can be ignored except when a small change determines a definite range spotting. Throughout the adjustment, the observer moves the adjusting rounds close enough to the OT line so that range spotting is accurate.

(3) If the OT distance is greater than 1,000 meters, round to the nearest thousand and express it in thousands of meters (Example 2). If the OT distance is less than 1,000 meters, round to nearest 100 meters and express it as a decimal in thousands of meters (Example 3).

**EXAMPLE 1:**

Observer deviation 20 mils
OT distance 2,000 meters
OT factor 2
Observer deviation x OT factor = deviation correction.
20 x 2 = 40 meters

**EXAMPLE 2:**

OT distance 4,200 meters—OT factor 4.0
OT distance 2,700 meters—OT factor 3.0

**EXAMPLE 3:**

OT distance 800 meters—OT factor 0.8

c. **Angle T.** Angle T (Figure 8-9) is the angle formed by the intersection of the gun-target line and the OT line with its vertex at the target. If angle T is 500 mils or greater, the FDC should tell the observer. If this occurs, the observer continues to use the OT factor to make his deviation corrections. If he sees that he is getting more of a correction than he has asked for, the observer should consider cutting the corrections to better adjust rounds onto the target.

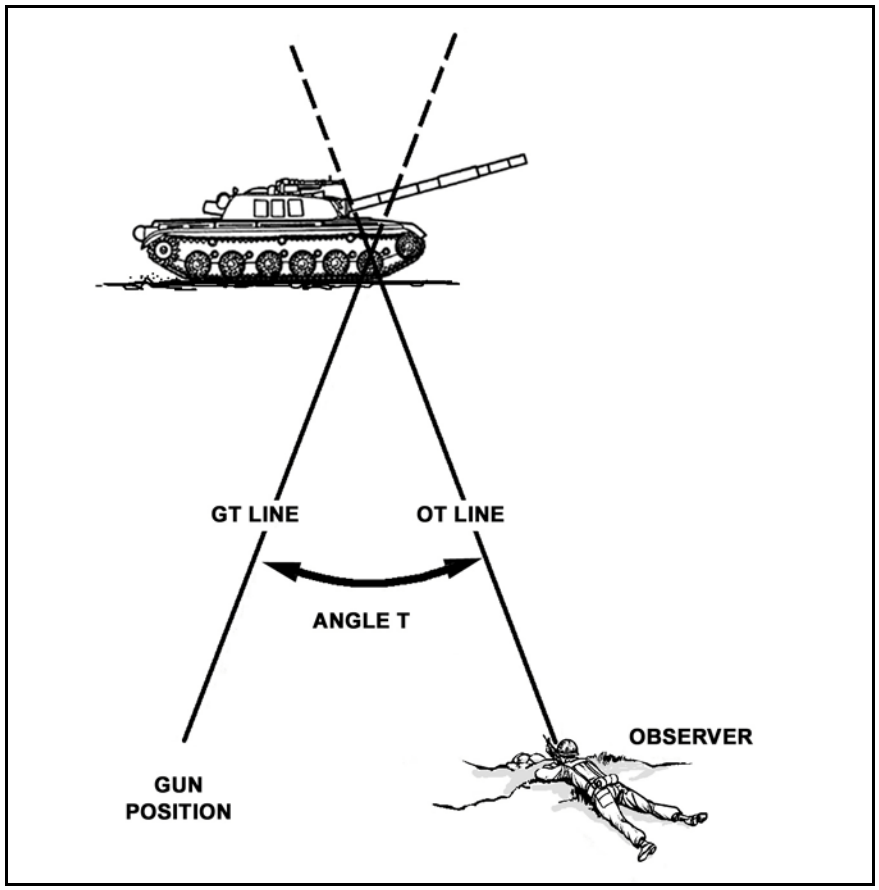



**Figure 8-9. Angle T.**

d. **Range Spotting.** Range spotting (short or over) requires adjusting the range to obtain fire on the target. An adjusting round's burst on or near the OT line gives a definite range spotting. If he cannot make a definite spotting, the observer announces a "lost" or "doubtful" spotting. In these situations only, he gives the deviation correction to the FDC.

(1) ***"Over."*** The observer sees the burst beyond the adjusting point.

(2) ***"Short."*** The observer sees the burst between himself and the adjusting point.

(3) ***"Target."*** The observer sees the burst hit the target. He uses this spotting only in precision fire (destruction missions).

(4) ***"Range Correct."*** The observer believes that the burst occurred at the correct range.

(5) ***"Doubtful."*** The observer sees the burst but cannot tell whether it occurred over, short, target, or range correct.

(6) ***"Lost, Over" or "Lost, Short."*** The observer cannot see the burst, but he knows that it occurred beyond or short of the adjusting point.

e. **Range Correction.** With each successive correction, the *adjusting round* lands over or short of the *adjusting point*, but closes on the target.

(1) ***Bracketing.*** Bracketing brings fire on a target. Time is important, especially while targets move or seek cover from fire. Accuracy of data and speed of adjustments

determine the effectiveness of the fire. To reduce adjustment time, the observer tries to bracket the target with the first two or three adjusting rounds.

(2) ***Successive Bracketing.*** The observer calls FFE when a range correction brings the round within 50 meters of the adjusting point. He also calls FFE when the firer splits a 100-meter bracket; for example, "Drop 50, fire for effect." This technique is called successive bracketing (Figure 8-10). When bracketing, the observer uses the following guide to determine his first range correction:

- OT between 1,000 to 2,000 meters--add or drop at least 200 meters.
- OT greater than 2,000 meters--add or drop at least 400 meters.

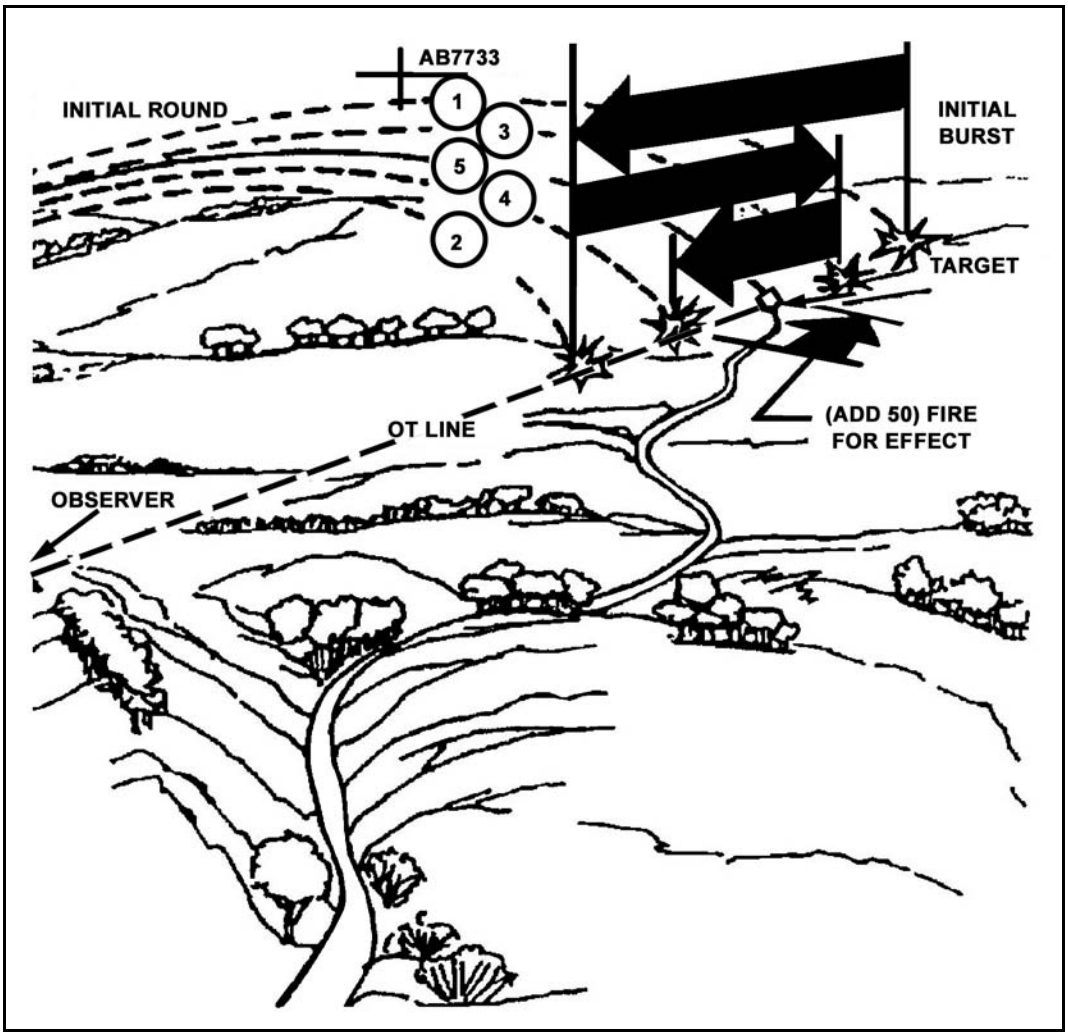



**Figure 8-10. Successive bracketing technique.**

(3) ***Hasty Bracketing.*** The effect on the target decreases as the number of rounds used in adjustment increases. Successive bracketing ensures that FFE rounds hit within 50 meters of the adjusting point. Hasty bracketing offers a quicker alternative to successive bracketing. A successful hasty bracket depends on a thorough terrain analysis, which gives the observer an accurate initial target location. For his first correction, the observer receives a bracket similar to that used for successive bracketing. Once the

observer receives the initial bracket, he uses it like a yardstick to determine the subsequent correction. He then sends the FDC the correction to move the rounds to the target and to fire for effect (Figure 8-11). Hasty bracketing improves with observer experience and judgment.

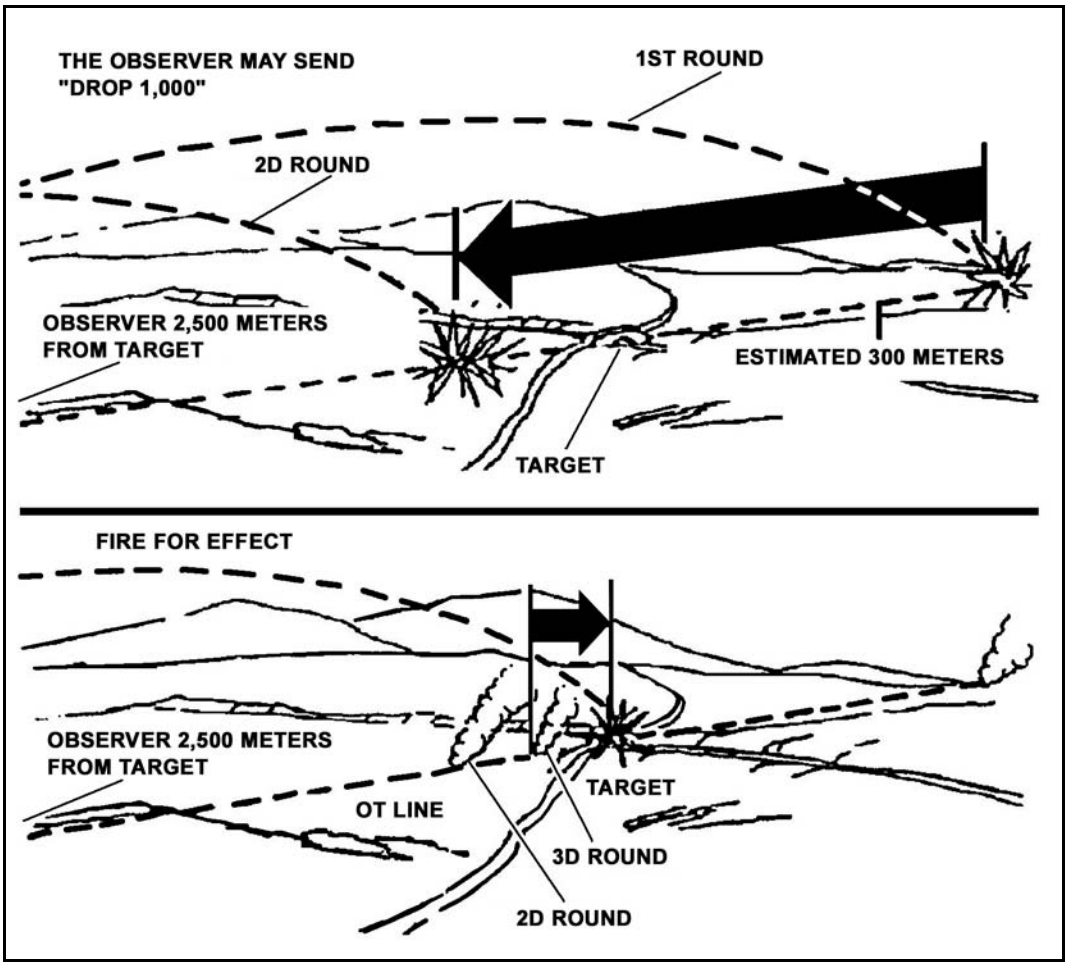



**Figure 8-11. Hasty bracketing technique.**

(4) ***Creeping Method.*** In danger-close situations the observer uses the creeping method of adjustment. The observer calls for the first round, deliberately overshooting the target. He adjusts rounds in 100-meter increments or less until the fire hits the target (Figure 8-12, page 8-16). This method requires more time and ammunition than other methods; therefore, the observer uses it only when he must consider safety first.

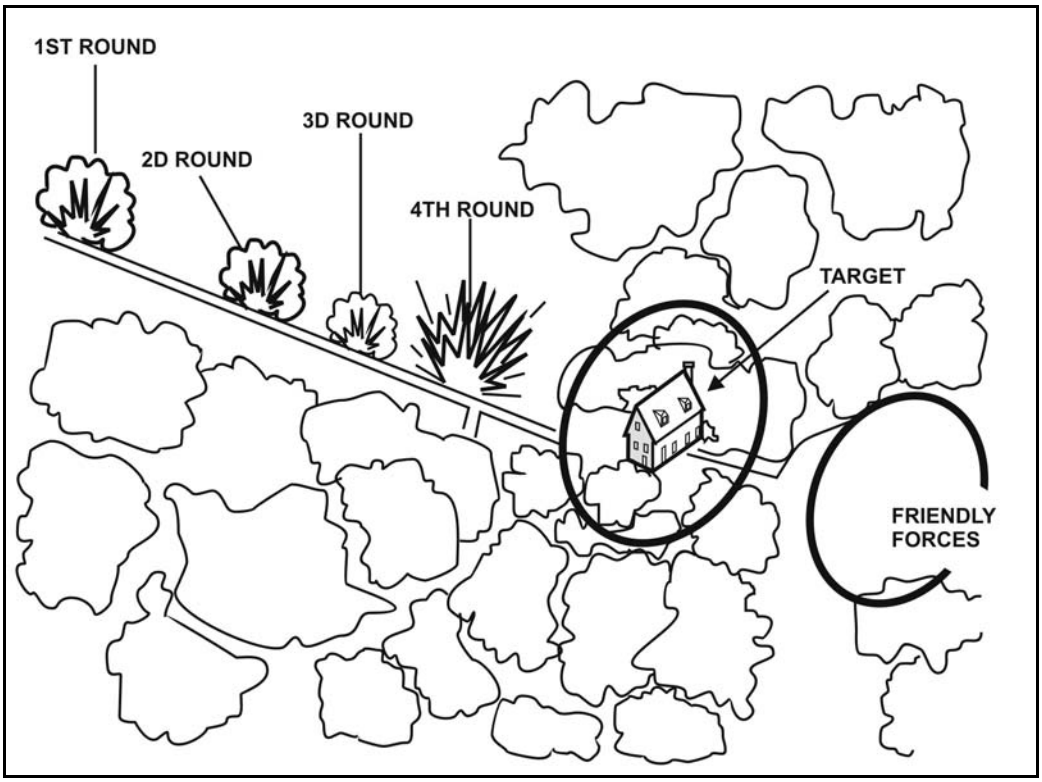



**Figure 8-12. Creeping method of adjustment.**

## 8-6. MORTAR SUPPORT

The battalion mortar platoon has both 120-mm and 81-mm mortars. The company has 120-mm and 60-mm mortars. The battalion and company mortars provide immediate indirect fire support. Using mortars, the platoon can quickly place a heavy volume of accurate, sustained fire on the threat. Mortar rounds can strike targets that low-angle fires cannot reach. These include targets on reverse slopes, in narrow ravines or trenches, and in forests or towns, among others. The platoon will receive the preponderance of indirect fire support from mortars.

a. **Types of Mortar Support.** Mortars provide the following types of effective support.

(1) ***Suppression*.** The platoon can fire HE rounds to force the enemy to button up or move to a less advantageous positions. Only a direct hit, however, will destroy an armored vehicle.

(2) ***Smoke***. The platoon uses white phosphorus (WP) rounds for obscuration and screening. Mortar smoke builds up more rapidly than artillery smoke. To obscure the enemy's vision, the platoon places smoke on or just in front of his positions. Placing smoke between the enemy and the platoon's position conceals platoon movement. Mortar smoke marks enemy positions to aid in friendly maneuver and to orient direct fires. Scouts must be careful, however, not to allow smoke to work against them by marking their own positions for enemy gunners.

(3) ***Illumination*.** The platoon uses illumination rounds to light an area or enemy position during periods of limited visibility. Illumination increases the effectiveness of image-intensification devices, which helps with gathering information, adjusting artillery,

and engaging enemy targets. The platoon also uses ground-burst illumination to mark enemy positions and to provide a thermal target reference point (TRP) for control of fires. The platoon must use illumination carefully so as not to illuminate friendly positions. Because US night-vision devices work better than those of most potential adversaries, the platoon may not need to illuminate the battlefield at all. Doing so could cause more harm than good by revealing friendly positions.

b. **Capabilities and Limitations.** The advantages of using the mortar platoon include its close working relationship with the platoons, fast response time, and availability for low-density targets. The limitations of mortars are--

- Short-range capability only.
- Few types of ammunition available.
- Mortar elements can carry only limited amounts of ammunition.
- FDC and mortar tubes cannot be linked to AFATDS.

## 8-7. FIELD ARTILLERY SUPPORT

The platoon must know how to use artillery support to its best advantage. Artillery often offers the best way to impede and disrupt enemy formations and suppress enemy positions. It can provide immediate, responsive, and accurate fires with a wide variety of munitions. The platoon may receive FA priority of fire.

a. **Capabilities.** In support of the platoon, FA elements can--

- Provide fires in all weather conditions and on all types of terrain.
- Shift and mass fires rapidly.
- Support the battle in depth with long-range fires.
- Provide a variety of conventional shell and fuze combinations.
- Provide continuous fires by careful positioning and timely displacement.

b. **Limitations.** FA support has the following limitations:

- Limited capability against moving targets.
- May require large amounts of ammunition to destroy point targets.
- Firing signature makes it vulnerable to detection.

c. **Munitions.** FA employs a wide variety of munitions that the platoon can tailor to engage different types of targets.

(1) ***High-Explosive.*** The best targets for HE rounds include personnel, field fortifications, and vehicles.

(2) ***Smoke.*** The best uses for smoke include obscuring and screening friendly soldiers.

(3) ***Illumination.*** Ideally, these illuminate only the threat, not friendly forces.

(4) ***White Phosphorus.*** This volatile material effectively obscures friendly soldiers or actions, marks locations, and burns obstacles and equipment.

(5) ***Cannon-Launched Guided Projectiles.*** These projectiles (Copperheads) work best against point targets.

(6) ***Improved Conventional Munitions.*** Improved conventional munitions (ICM) work best against personnel targets.

(7) ***Dual-Purpose Improved Conventional Munitions.*** These munitions work best against personnel and light armored vehicles in the open.

(8) ***Scatterable Mines.*** These include *area denial munitions* for use against personnel and *remote antiarmor mines* for use against armored vehicles. An FA battery cannot mix

other fire missions with scatterable mine missions. Scatterable mines require slightly more lead time than other FA-delivered munitions.

**NOTE:** The commander or leader must consider the danger to friendly troops in areas where friendly forces fire AP munitions. The potential dud rate of ICM makes maneuver in the area of an ICM field hazardous.

## 8-8. FIRE DIRECTION ASSETS

The battalion fire support element consists of the fire support officer, an assistant FSO (A/FSO), a senior fire support noncommissioned officer (FSNCO), an assistant FSNCO, and two fire support specialists. The FSE assists the battalion commander and S3 with planning, integrating, coordinating, and executing all types of available supporting fires during tactical operations. The FSE is the commander's primary fire support coordinator and provides a direct link to the battalion's indirect fire support systems and supporting artillery units. The FSE is the primary fire support coordination element for the reconnaissance platoon. During specific missions or when special munitions engagements require on-target designation, the battalion commander may OPCON or attach a fire support team to the platoon. The FIST is organic to the SBCT infantry company**.** The FIST's command-and-control link with the artillery makes it a valuable resource.

a. The FSE serves as the net control station (NCS) on the battalion fire support net. The FIST relays the call for fire to supporting artillery on a digital net (AFATDS) or sends the fire mission to the mortar platoon or section. The command net allows the FIST to monitor unit operations. It links the FIST to the commander and platoon leaders for planning and coordination. The battalion FSO is the unit fire support coordinator. While the maneuver commander is responsible for integrating fire support and maneuver, the FSO must understand the scheme of maneuver as well as the battalion commander does. Based on the commander's guidance, the FSO devises his fire support plan, which must be presented to the commander for approval. FSO responsibilities include the following:

- Plan, coordinate, and execute fire support.
- Advise the company commander on fire support matters to include capabilities, limitations, and employment of all fire support assets available to support his operation.
- Ensure the battalion fire support plan is developed as an integral part of the battalion OPORD and or operation plan (OPLAN) and that essential fire support tasks (EFSTs) are adequately addressed in the maneuver rehearsals.
- Make recommendations to integrate fire support assets (FA and mortars) into the maneuver commander's battle plan.
- Keep key personnel informed of pertinent information (by spot reports and situation reports).
- Train the FIST and FOs in applicable fire support matters.
- Request, adjust, and direct all types of fire support.
- Ensure the fire support plan and or execution matrix is prepared and disseminated to key personnel.
- Advise the commander on positioning and use of mortars.

- Allocate FOs and other observers to maintain surveillance of target and named areas of interest.
- Integrate and employ combat observation lasing teams into planned operations.
- Plan, direct, and manage the employment of observer platforms and laser equipment where they will best support the commander's concept of operation.
- Provide emergency control of CAS and naval gunfire (NGF) in the absence of qualified personnel.

b. The FIST is organized, equipped, and trained to provide a fire support advisor and coordinator. It also provides a communications link to all available fire support assets.

## 8-9. FIRE REQUEST CHANNELS

The reconnaissance platoon can request indirect fire in several ways. The battalion SOP should specify which method it will use. The reconnaissance platoon leader must also coordinate with the battalion FSO, FSE, or both, on which of these methods the platoon will employ.

a. **Mortar Requests**. The platoon can send requests for mortar fire directly to the mortars on the battalion heavy mortar net. The FSE monitors these requests (Figure 8-13).

b. **Artillery Requests**. The platoon can send requests for artillery fire directly to the FA battalion on a fire direction net; the FSE monitors the requests (Figure 8-14, page 8-20).

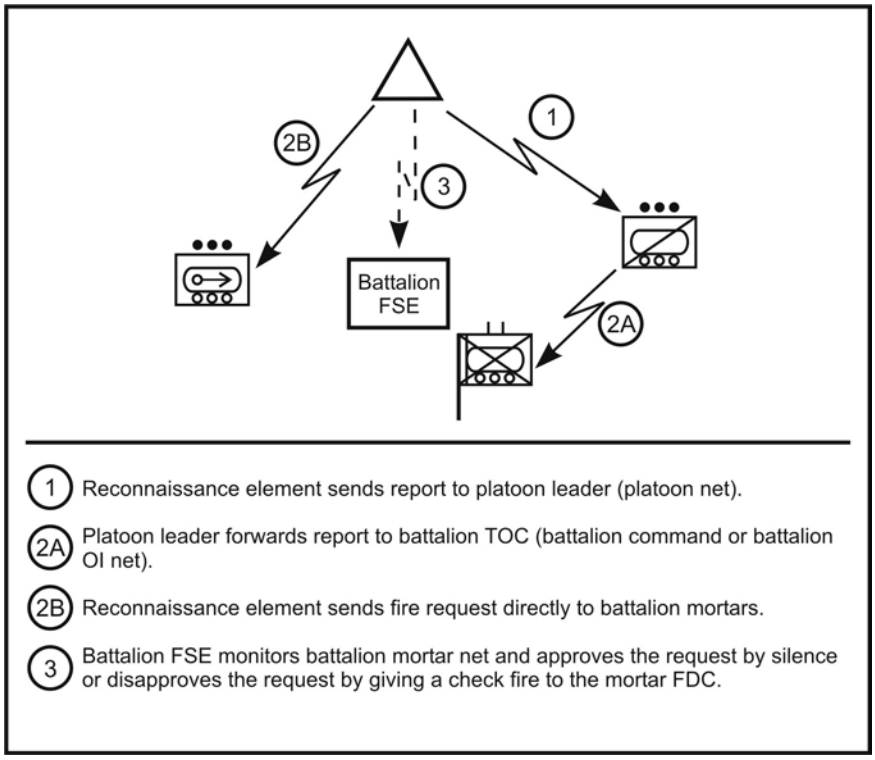



**Figure 8-13. Platoon requesting fire from battalion mortars.**

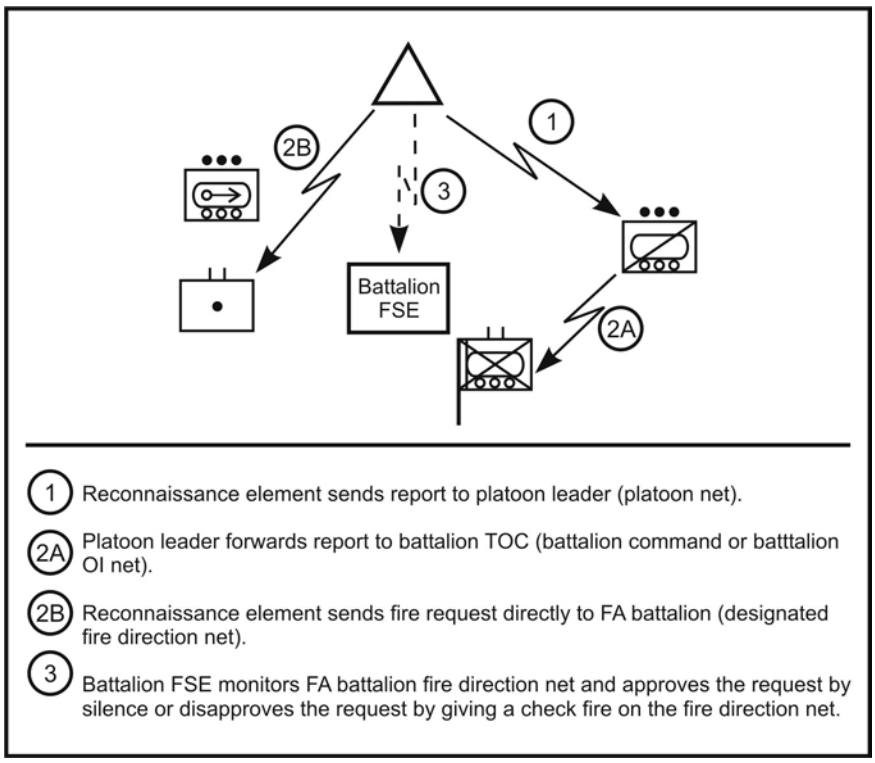



**Figure 8-14. Platoon requesting fire from FA battalion.**

c. **Quick Fire Channel.** A quick fire channel is established to directly link an observer (or other target executor) with a weapon system (Figure 8-15). Quick fire channels may be either voice or digital nets. Quick fire channels within a maneuver brigade are normally established on FA or mortar nets. These channels are designed to expedite calls for fire against high profile targets (HPTs) or to trigger preplanned fires. Quick fire channels also may be used to execute fires for critical operations or phases of the battle. Examples include linking a COLT with a battery or platoon FDC for counterreconnaissance fires or an AN-TPQ-37 radar with the multiple launch rocket system (MLRS) battery FDC for counterfires. Copperhead missions can best be executed by using quick fire channels.

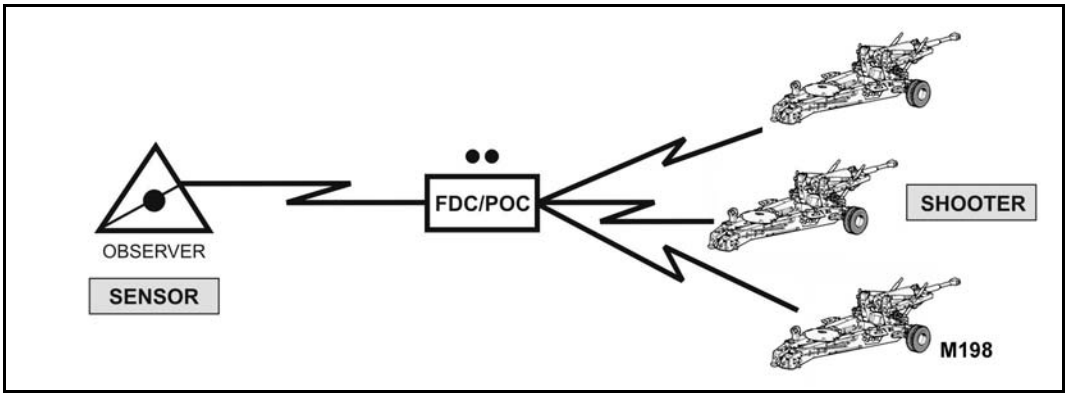



**Figure 8-15. Quick fire channel illustrating sensor-to-shooter link.**

## 8-10. CLOSE AIR SUPPORT

All services can provide CAS to the battalion. CAS missions are flown against hostile targets near friendly forces. The forward air controller (FAC) is the battalion commander's expert in planning, requesting, and executing CAS missions. The FAC serves as a link between the maneuver element and the attacking aircraft. The platoon may provide information that the FAC or tactical air control party (TACP) uses to target enemy forces. Soldiers may provide emergency control if an FAC, FSO, or FO is not available (the battalion commander accepts responsibility for friendly casualties). This is possible only with aircraft equipped with FM radios. Most US Air Force, Navy, and Marine Corps fixed-wing aircraft only have UHF radios (A/OA-10, F16, AV-8B, F-14, F/A-18, and AC-130). (For additional information, see FM 6-30.) The platoon also may provide information on battle damage as observed. Figure 8-16 shows the format for assessing and reporting battle damage.

**BATTLE DAMAGE ASSESSMENT**

SUCCESSFUL OR UNSUCCESSFUL.
TARGET COORDINATES.
TIME ON TARGET.
NUMBER AND TYPE DESTROYED.
NUMBER AND TYPE DAMAGED.
KILLED BY AIR.
WOUNDED BY AIR.
DUD BOMBS.

**Figure 8-16. Format for battle damage assessment.**

a. **AC-130 Gunship.** If the enemy air defense is low, the battalion requests CAS from an AC-130 gunship. The AC-130 provides effective fires during day and night operations and flies CAS and special operations. The aircraft contains one 40-mm gun, two 20-mm guns, two 7.62-mm mini-guns, and one 105-mm howitzer. It is equipped with sensors and target acquisition systems that include forward-looking infrared radar (FLIR) and low-light television.

b. **Marking Friendly Positions.** Whenever possible, friendly positions are marked to enhance safety and to provide target area references. Methods of marking friendly positions are shown in Table 8-3, pages 8-23 and 8-24.

| METHOD | DAY/ NIGHT | ASSETS | FRIENDLY MARKS | TARGET MARKS | REMARKS |
|---|---|---|---|---|---|
| SMOKE | D/N | ALL | GOOD | GOOD | Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures. |
| SMOKE (IR) | D/N | ALL/ NVD AT NIGHT | GOOD | GOOD | Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures. Night marking is greatly enhanced by the use of IR reflective smoke |
| ILLUM, GROUND BURST | D/N | ALL | N/A | GOOD | Easily identified, may wash out NVDs. |
| SIGNAL MIRROR | D | ALL | GOOD | N/A | Avoids compromise of friendly location. Dependent on weather and available light and may be lost in reflections from other reflective surfaces (windshields, windows, water) |
| SPOT LIGHT | N | ALL | GOOD | MARGINAL | Highly visible to all. Compromises friendly position and warns of fire support employment. Effectiveness is dependent upon degree of urban lighting. |
| IR SPOT LIGHT | N | ALL NVD | GOOD | MARGINAL | Visible to all with NVGs. Less likely to compromise than overt light. Effectiveness dependent upon degree of urban lighting. |
| IR LASER POINTER (below .4 watts) | N | ALL NVG | GOOD | MARGINAL | Effectiveness dependent upon degree of urban lighting. |
| IR LASER POINTER (above .4 watts) | N | ALL NVD | GOOD | GOOD | Less affected by ambient light and weather conditions. Highly effective under all but the most highly lit or worst weather conditions. IZLID-2 is the current example. |
| VISUAL LASER | N | ALL | GOOD | MARGINAL | Highly visible to all. Risk of compromise is high. Effectiveness dependant upon degree of urban lighting. |
| LASER DESIG-NATOR | D/N | PGM OR LST EQUIP-PED | N/A | GOOD | Highly effective with PGM. Very restrictive laser acquisition cone and requires line of sight to target. May require pre-coordination of laser codes |

**Table 8-3. Methods of marking friendly positions.**

| METHOD | DAY/ NIGHT | ASSETS | FRIENDLY MARKS | TARGET MARKS | REMARKS |
|---|---|---|---|---|---|
| TRACERS | D/N | ALL | N/A | MARGINAL | May compromise position. May be difficult to distinguish mark from other gunfire. During daytime use, may be more effective to kick up dust surrounding target. |
| ELECTRON-IC BEACON | D/N | SEE RE-MARKS | EXCELLENT | GOOD | Ideal friendly marking device for AC-130 and some USAF fixed wing (not compatible with Navy or Marine aircraft). Least impeded by urban terrain. Can be used as a TRP for target identification. Coordination with aircrews essential to ensure equipment and training compatibility. |
| STROBE (OVERT) | N | ALL | MARGINAL | N/A | Visible by all. Effectiveness dependent upon degree of urban lighting. |
| STROBE (IR) | N | ALL NVD | GOOD | N/A | Visible to all NVDs. Effectiveness dependent upon degree of urban lighting. Coded strobes aid in acquisition. |
| FLARE (OVERT) | D/N | ALL | GOOD | N/A | Visible by all. Easily identified by aircrew. |
| FLARE (IR) | N | ALL NVD | GOOD | N/A | Visible to all NVDs. Easily identified by aircrew. |
| GLINT/IR PANEL | N | ALL NVD | GOOD | N/A | Not readily detectable by enemy. Very effective except in highly lit areas. |
| COMBAT IDENTIFI-CATION PANEL | D/N | ALL FLIR | GOOD | N/A | Provides temperature contrast on vehicles or building. May be obscured by urban terrain. |
| VS-17 PANEL | D | ALL | MARGINAL | N/A | Only visible during daylight. Easily obscured by structures. |
| CHEMICAL HEAT SOURCES | D/N | ALL FLIR | POOR | N/A | Easily masked by urban structures and lost in thermal clutter. Difficult to acquire, can be effective when used to contrast cold background or when aircraft knows general location. |
| SPINNING CHEM-LIGHT (OVERT) | N | ALL | MARGINAL | N/A | Provides unique signature. May be obscured by structures. Provides a distinct signature easily recognized. Effectiveness dependent upon degree of urban lighting. |
| SPINNING CHEM-LIGHT (IR) | N | ALL NVD | MARGINAL | N/A | Provides unique signature. May be obscured by structures. Effectiveness dependent upon degree of urban lighting. |

**Table 8-3. Methods of marking friendly positions (continued).**

## 8-11. ATTACK HELICOPTERS

The primary mission of attack helicopter units is to destroy armor and mechanized forces. Employing attack helicopters in combined arms operations increases the lethality of ground maneuver forces.

a. **Aircraft Characteristics.** The AH-64A Apache, the AH-64D Longbow Apache, the OH-58D Kiowa Warrior, and the AH-1W or AH-1Z (USMC) are employed in attack operations. Table 8-4 provides a comparison of the weapon systems and armaments on these attack helicopters. (The table also lists weaponry for the AH-1 Cobra which is no longer in the active Army inventory but might be used to provide attack support in joint operations with U.S. Marine units.)

| AIRCRAFT TYPE | WEAPONS SYSTEMS | | | | | | |
|---|---|---|---|---|---|---|---|
| | Hellfire/TOW [1] | | Air-to-Air Stinger | 2.75-inch (70-mm) rockets | Cal .50 MG (rds) | 20-mm cannon (rds) | 30-mm chain gun (rds) |
| AH-1 [2] | | 8 | | 76 | | 750 | |
| AH-64A [3] | 16 | | | 76 | | | 1,200 |
| AH-64D [3] | [4] 16 | | 4 | 76 | | | 1,200 |
| OH-58D [2,3] | 4 | | 4 | 14 | 500 | | |
| AH-1W/Z [5] | | | | | | | |
| Weapons Range (Max) | 8 km | 3,750 m | 5+ km | 8 km | 2 km | 2 km | 4 km |

Numbers in each column indicate the maximum load for each system.

[1] The AH-1 uses the TOW missile as its armor engagement weapon instead of the Hellfire missile.

[2] This aircraft carries one weapon system on each side (Hellfire, TOW, or both; air-to-air Stinger; and 2.75-inch rocket).

[3] Aircraft has a laser for target designation and an ATHS.

[4] Hellfire/Hellfire II.

[5] USMC helicopters will have varied weapons loads. During coordination, request on-board weapon status.

**Table 8-4. Helicopter weapon systems.**

b. **Close Combat Attack.** The close combat attack is a technique for directing lethal fires within the context of a preplanned mission. It does not replace the integrated military decision-making process (MDMP) between ground maneuver and aviation elements.

(1) To request immediate close combat attack, the ground unit in contact executes a face-to-face coordination or uses a radio transmission to provide a situation update to the attack aircraft (METT-TC permitting). This situation update contains essential elements from the aviation close combat attack coordination checklist (Figure 8-17, page 8-26).

(2) After receipt of a request for immediate close combat attack, the attack team leader informs the ground unit leader of the battle position, attack-by-fire position, or the

series of positions his team will occupy that will provide the best observation and fields of fire into the engagement or target area. The attack team leader then provides the ground maneuver unit leader with his concept for the team's attack on the objective.

(3) Upon mission completion, the attack team leader provides the ground maneuver commander a battle damage assessment (BDA) of the intended target.

**CLOSE COMBAT ATTACK CHECKLIST**

1. Enemy situation -- specific target identification.
2. Friendly situation -- location and method of marking friendly positions.
3. Ground maneuver mission and scheme of maneuver.
4. Attack aircraft scheme of maneuver.
5. Planned engagement area and BP/SBF position.
6. Method of target marking.
7. Fire coordination and fire restrictions.
8. Map graphics update.
9. Request for immediate aviation close fight support -- used for targets or for ground-to-air target handoff.

**Figure 8-17. Close combat attack coordination checklist.**

## Section III. COMBAT ENGINEER SUPPORT

The two core qualities of the SBCT are high mobility and the ability to achieve decisive action through dismounted infantry assault. At the tactical level, overmatching mobility is critical to the success of the force. Given the significance of tactical mobility to the SBCT's successful operations, the SBCT engineers are essential.

### 8-12. MEDIUM ENGINEER COMPANY

The SBCT's organic medium engineer company (MEC) provides embedded, responsive mounted and dismounted maneuver support. The MEC supports the maneuver force--the SBCT infantry battalions and companies. It readily integrates into maneuver operations and organizations at all levels based on the analysis of tasks required. It is an agile organization that assures freedom to maneuver on the battlefield within the combined arms team framework. The MEC has three combat mobility platoons, one mobility support platoon, and a company headquarters section. The MEC normally task-organizes its platoons to infantry battalions and companies in a specific command-support relationship to provide a mission-specific, tailored package. It performs mounted and dismounted engineer tasks equally well.

a. **Combat Mobility Platoon.** The combat mobility platoon is normally the lowest-level engineer unit that can effectively accomplish independent mounted engineer missions and tasks. It is the basic building block of engineer force allocation and task organization. A combat mobility platoon is normally task-organized to support an infantry battalion, but it may support an infantry company based on METT-TC analysis. The combat mobility platoon may receive augmentation in the form of special equipment

from the mobility support platoon. Engineer platoon-specific common-platform equipment includes engineer squad vehicles (ESVs) with mountable rollers or blades, mine-clearing line charges (MICLICs), and multiple-delivery mine systems (Volcanos) (Figure 8-18). The combat mobility platoon's engineer squads carry a variety of explosives and demolitions. The engineer squad is normally the minimum force required to provide effective dismounted support to the infantry. The squad is the engineer organization most likely to support the reconnaissance platoon, particularly during offensive operations.

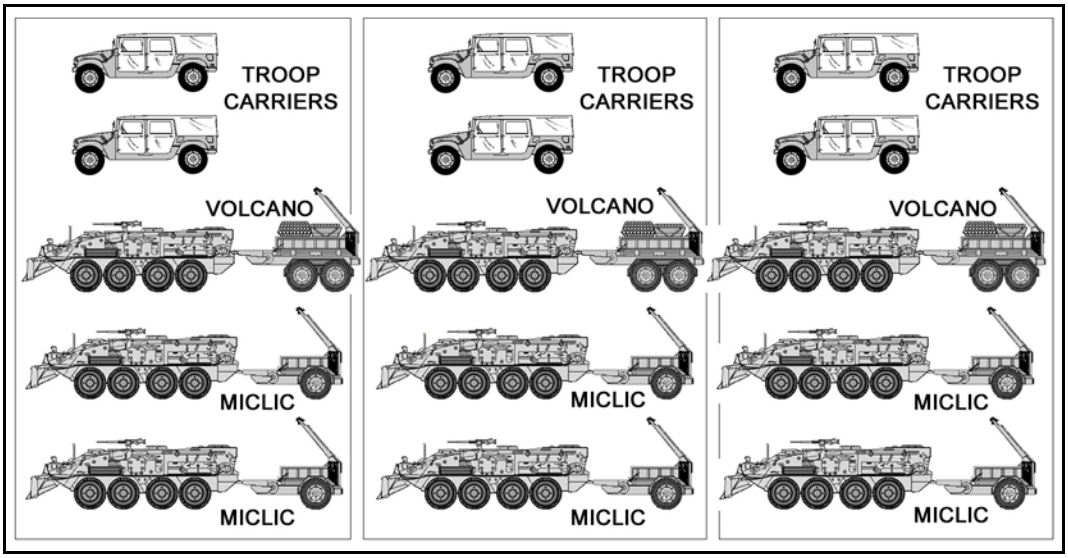



**Figure 8-18. Three combat mobility platoons.**

b. **Mobility Support Platoon.** The mobility support platoon consists of a platoon headquarters section and three equipment-based mobility sections (Figure 8-19, page 8-28), equipped with light assault bridges, light earthmovers (deployable universal combat earthmovers [DEUCEs]), and high mobility engineer excavators (HMEEs). Unlike the combat mobility platoon, it is not organized to operate independently during offensive operations. The mobility support platoon provides the commander with specialized equipment capabilities to weight the main effort and to perform specialized mobility tasks. Each section is structured to provide equipment augmentation, focused on reducing enemy obstacles and fortifications, to each of the three combat mobility platoons. Each section has gap-crossing, obstacle-reduction, special-tool, and heavy-blade capabilities. The mobility support platoon provides a limited capability for countermobility, survivability, and sustainment operations.

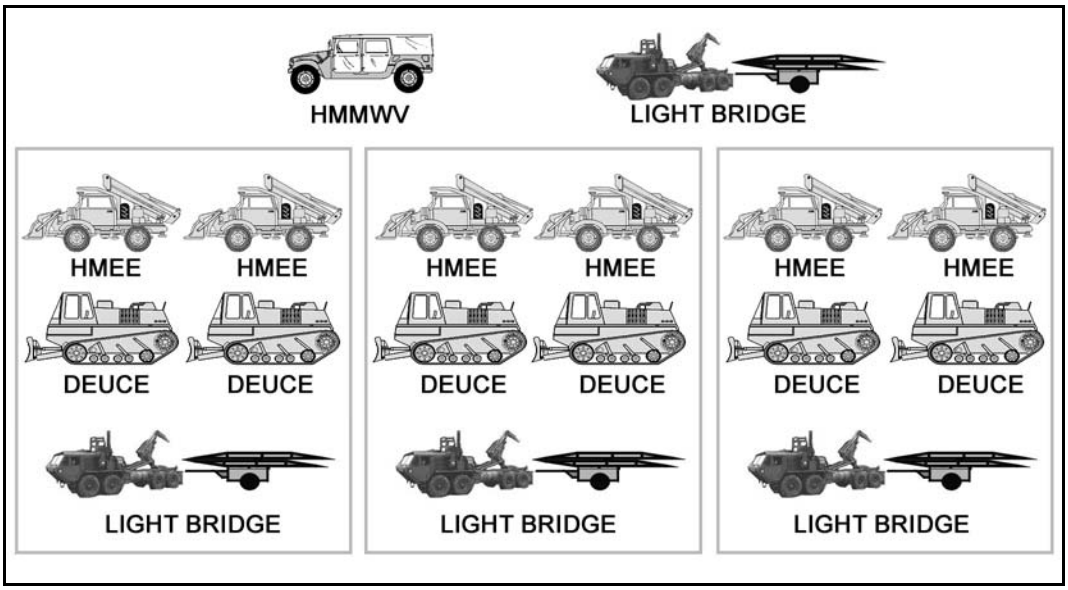



**Figure 8-19. Mobility support platoon.**

## 8-13. ENGINEER MISSIONS

Engineer missions fit into one of three categories: mobility, countermobility, and survivability. (Table 8-5 shows the tasks included in each of these categories.) An engineer may be attached to a reconnaissance platoon for specific missions. Engineers conduct reconnaissance, evaluate obstacles, and use demolitions and field expedients.

| MOBILITY | COUNTERMOBILITY | SURVIVABILITY |
|---|---|---|
| Breaching obstacles.<br>Clearing minefields.<br>Clearing routes.<br>Expedient gap crossing.<br>Constructing combat roads or trails. | Constructing obstacles to turn, fix, block, or disrupt enemy forces. | Constructing crew-served weapons and vehicle fighting positions. |

**Table 8-5. Engineer missions.**

## 8-14. MOBILITY

At the tactical level, overmatching mobility is critical to the success of the force. Engineers support infantry by performing obstacle reduction and route construction and or improvement.

a. **Obstacle Reduction.** Reduction is the creation of lanes through or over an obstacle to allow an attacking force to pass. The number and width of lanes created varies with the factors of METT-TC. The lanes must allow the assault force to rapidly pass through the obstacle. The breach force will reduce, proof (if required), mark, and report lane locations and the lane marking method by unit SOP. Engineers cannot reduce an obstacle until the obstacle has been identified, effective suppression and obscuration are in place, and the point of breach is secure. (For detailed discussions of breaching see FM 3-34.2.)

b. **Route Construction and Improvement.** Engineers have a limited capability to construct, improve, and maintain roads, bridges, and fords. In addition to providing mobility support during offensive operations, engineers can enhance mobility during defensive operations by focusing on the ability to shift forces. Enhancements to mobility during defensive operations include:

- Mobility between primary, alternate, and supplementary battle positions.
- Mobility of reserves to reinforcing positions.
- Mobility of reserves in the counterattack.

## 8-15. COUNTERMOBILITY

Engineers construct obstacles that prevent the enemy from successfully executing his scheme of maneuver. Commonly used obstacles include minefields, wire obstacles, antitank ditches, road craters, abatises, and log cribs. Engineers also can reinforce restricted terrain and existing obstacles to disrupt, fix, turn, or block the enemy.

## 8-16. SURVIVABILITY

The survivability plan will be synchronized with the battalion countermobility plan. The platoon should prepare by marking vehicle positions, identifying leaders to supervise position construction, and designating guides for the blade movement between positions. Platoons will execute the commander's plan for priority of the survivability effort. This plan should specify the following:

- Level of survivability of each subordinate unit.
- Priority of survivability support by specific unit, type of weapon system, or combination.
- Type of position to be dug for a unit or type of weapon system.

## 8-17. RECONNAISSANCE OPERATIONS.

In reconnaissance operations, an engineer squad can be in DS to a reconnaissance platoon. The engineer squad aids in mobility operations and provides technical advice to the platoon leader as to what effort and equipment it will take to breach a certain obstacle. The platoon leader relays this information back to the battalion to aid in its breaching preparations. The actual breaching abilities of an engineer squad are limited to manual and explosive methods. (The platoon provides security for the engineer squad while it conducts breaches.) The engineer squad can--

- Conduct route and bridge classification.
- Aid in locating bypasses around obstacles.
- Conduct limited breaching operations through log cribs, abatis, and minefields.

# Section IV. AIR DEFENSE

The air defense and aviation coordination cell's (ADACC's) air and missile defense (AMD) analysis determines if the SBCT will be task organized with air defense assets from a divisional short-range air defense (SHORAD) battalion. Even if the SBCT and subsequently the SBCT infantry battalion receive air defense assets, it is unlikely that the reconnaissance platoon will be task-organized with any of the air defense assets. However, Avengers and Linebackers may operate in and around the battalion AO in

support of brigade assets. Therefore, the reconnaissance platoon must conduct its own air defense operations, relying on disciplined passive air defense measures and the ability to actively engage aerial platforms with organic weapons systems.

## 8-18. SYSTEMS, ORGANIZATION, AND CAPABILITIES

The systems that may operate in and adjacent to the battalion AO are the Avenger, man-portable air defense systems (MANPADS), and Linebacker (Table 8-6). All systems can operate as MANPADS Stinger teams. The battalion may be supported by an air defense platoon equipped with Avengers or MANPADS. The air defense platoon is responsible for providing DS, GS, or GS-R coverage to the battalion.

| | |
|---|---|
| Man-Portable System<br>  | Personnel: 2-man crew<br>Basic load: 6 missiles basic load w/ M998 HMMWV<br>Acquisition/range: Visual<br>Engagement range: 5 km<br>Engagement altitude: 3 km +<br>Mutual support: 2 km + |
| Bradley Linebacker<br>  | Personnel: 4-man crew<br>Basic load: 10 missiles (4 ready to fire, 6 stowed)<br>Acquisition/range: Visual/thermal<br>Engagement range: 5 km (Stinger), 2500 m 25-mm, 900 m coax<br>Engagement altitude: 3 km +<br>Mutual support: 3 km<br>Emplacement time: Fire on the move<br>Reload time: 4 minutes |
| Avenger<br>  | Personnel: 2 man crew<br>Basic load: 8 ready-to-fire missiles, 250 rds .50 cal<br>Acquisition/range: Visual/FLIR 9-10 km, laser range finder<br>Engagement range: 5 km +, .50 cal range: 6,470 m<br>Rate of fire: 1025 rpmEngagement altitude: 3 km +<br>Mutual support: 3 km<br>Emplacement time: 6 min, can remote operations out to 50 meters |

**Table 8-6. Air defense systems.**

a. **Stinger.** Although other SHORAD systems support divisional units, the SBCT infantry battalion reconnaissance platoon is most likely to be supported by the Avenger (Figure 8-20) or a MANPADS (Figure 8-21, page 8-32). Stinger is designed to counter high-performance, low-level, ground attack aircraft, helicopters, and observation and transport aircraft.

(1) The Avenger's combined arms mission is to provide protection to combat forces, combat support elements, and other critical assets from attack. The Avenger is designed to counter hostile cruise missiles, unmanned aerial vehicles, and low-flying, high-speed, fixed-wing aircraft and helicopters attacking or transiting friendly airspace. The Avenger provides the battalions with highly mobile, dedicated air defense firepower. The Avenger is equipped with two standard vehicle-mounted launchers (SVML) which carry four Stinger missiles each and have the following capabilities:

- The modified fire control subsystem fires and the SVML allow the Avenger to shoot on the move.
- The Avenger weapon system has an unobstructed, 360-degree field of fire and can engage at elevations between -10 and +70 degrees.
- The .50 cal machine gun affords a measure of self-protection by providing additional coverage of the Stinger missile's inner launch boundary.
- Avenger's sensor package (FLIR, carbon dioxide, eye-safe laser range finder, and a video autotracker) provides target acquisition capability in battlefield obscuration, at night, and in adverse weather.
- The two-man crew remains in the vehicle under armor protection.
- Targeting data is provided by the forward area air defense (FAAD) command, control, communications, and intelligence (C3I).
- The Avenger system allows shoot-on-the-move and slew-to-cue capability.
- In the event of launcher system damage or failure or static mode, the system maintains dismounted Stinger missile capability.
- The firing sequence is entirely automated, including super-elevation and lead, so that the gunner only needs to push the fire button to initiate the fire sequence and immediately select and prepare the next missile for firing.

**Figure 8-20. AVENGER.**

(2) The MANPADS Stinger missile system employs a two-man crew (crew chief and gunner). The MANPADS team normally has assigned transportation. Unit leaders must consider carefully the consequences before separating a Stinger team from its vehicle. Stinger teams operating away from their vehicles have no more than two missiles available for resupply.

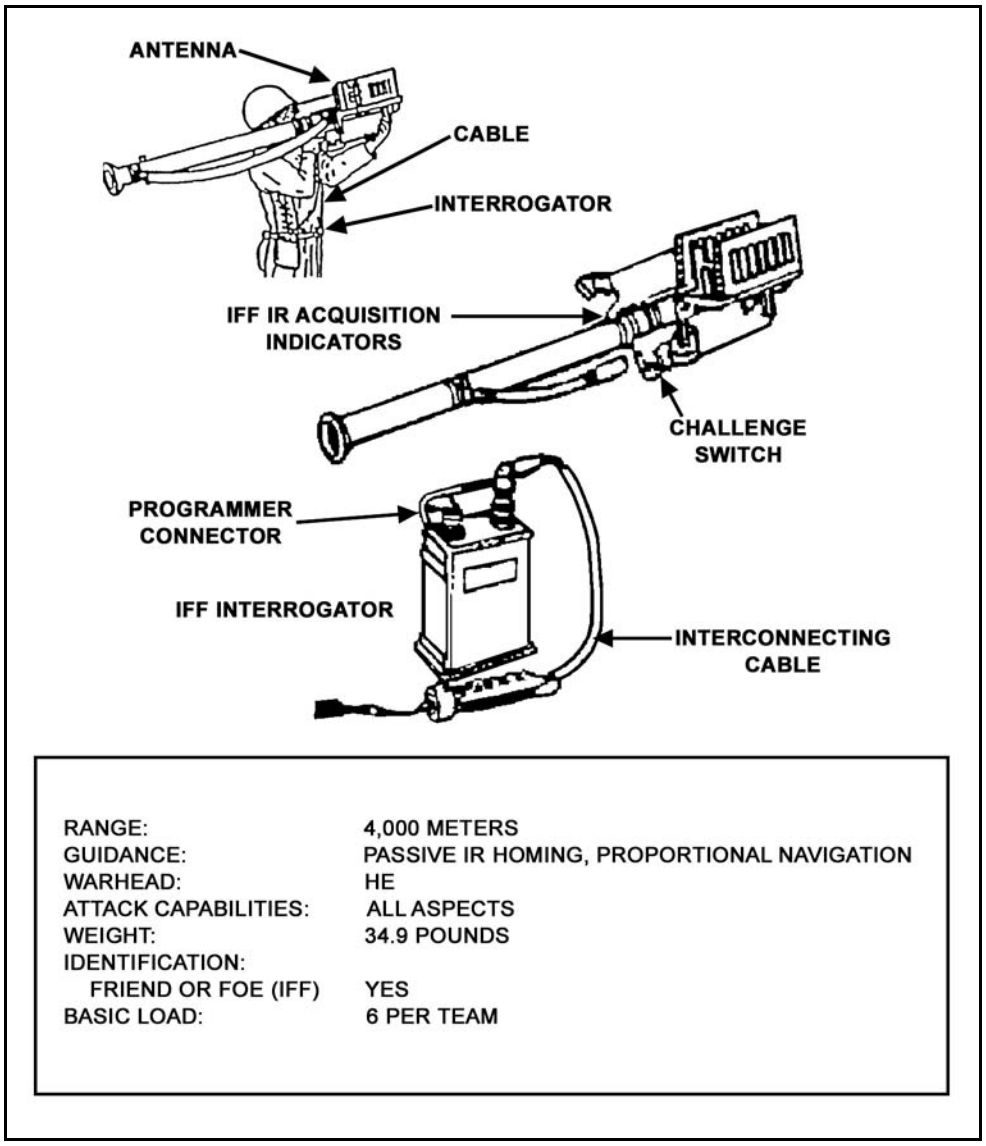



**Figure 8-21. Stinger MANPADS air defense system.**

b. **Early Warning Alerts.** If the brigade has an attached SHORAD battery, the platoon will receive early warning alerts from the SHORAD battery and its elements. The SHORAD C3I Sentinel radar team can broadcast early warning of threat air activity to SHORAD elements (battery, platoon, or section), to FA fire units, and to air defense liaison officers (LNOs). The SHORAD battery will then provide voice early warning on the brigade command net. If METT-TC factors permit, the SHORAD platoon provides voice early warning to the battalions. The Sentinel radar (Figure 8-22) provides a 360-degree detection capability for various air tracks (rotary- and fixed-wing aircraft, UAVs, and cruise missiles) to a range of 40 kilometers. The Sentinel radar is normally OPCON to the respective SHORAD battery commander.

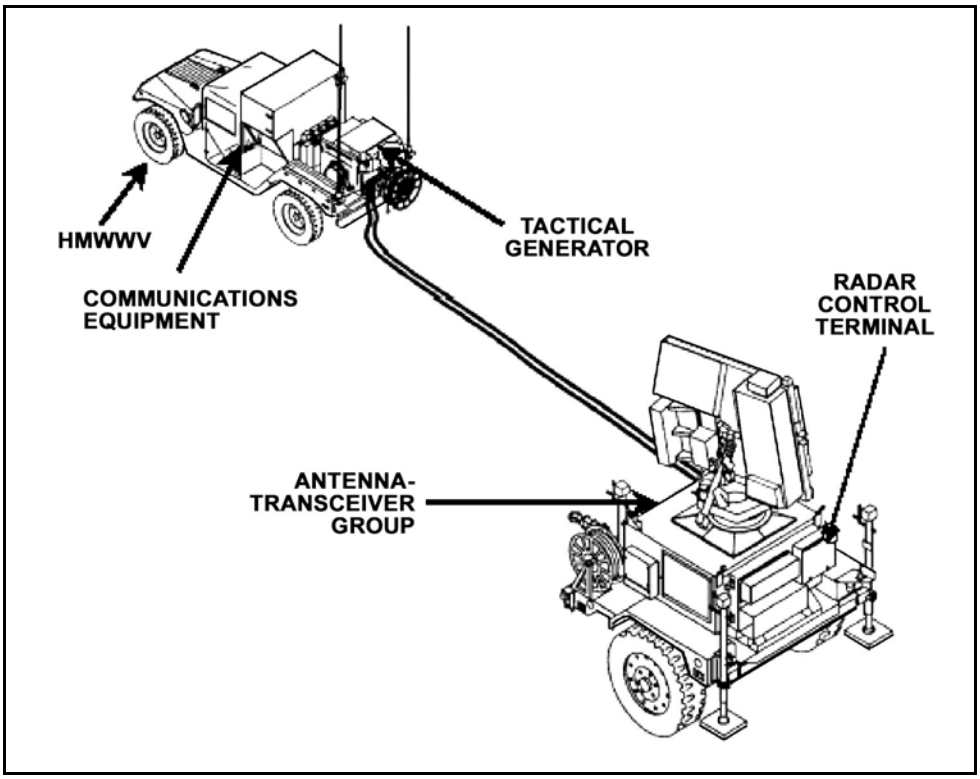



**Figure 8-22 Sentinel radar system.**

## 8-19. EMPLOYMENT OF AIR DEFENSE SYSTEMS

In offensive situations, air defense elements accompany the main attack. They may maneuver with the battalion's lead companies, orienting on low-altitude air avenues of approach. When the unit is moving or in a situation that entails short halts, air defense elements should remain within the platoon's organic weapon system maximum ranges to assure mutual support. The Stinger gunners (MANPADS) can dismount to provide air defense when the unit reaches the objective or pauses during the attack. In the defense, air defense elements may establish BPs based on available IPB information and the commander's scheme of maneuver.

## 8-20. WEAPONS CONTROL STATUS

The weapons control status (WCS) describes the relative degree of control in effect for air defense fires. It applies to all weapons systems. The weapons control status is dictated in the task force OPORD and may be updated based on the situation. The three levels of control are:

a. **Weapons Free**. Crews can fire at any air target not positively identified as friendly. This is the least restrictive WCS level.

b. **Weapons Tight.** Crews can fire only at air targets positively identified as hostile according to the prevailing hostile criteria.

c. **Weapons Hold.** Crews are prohibited from firing except in self-defense or in response to a formal order. This is the most restrictive control status level.

## 8-21. EARLY WARNING PROCEDURES

Air defense warnings (ADWs) include--

- RED - Air or missile attack imminent or in progress.
- YELLOW - Air or missile attack probable.
- WHITE - Air or missile attack not likely.

While air defense warnings cover the probability of hostile air action over the entire theater of war or operations, local ADWs describe with certainty the air threat for a specific part of the battlefield. Air defense units use these local warnings to alert Army units to the state of the air threat in terms of "right here, right now." There are three local air defense warning levels:

- DYNAMITE - Air platforms are inbound or are attacking locally now.
- LOOKOUT - Air platforms are in the area of interest but are not threatening. They may be inbound, but there is time to react.
- SNOWMAN - No air platforms pose a threat at this time.

**NOTE:** The area air defense commander routinely issues ADWs for dissemination throughout the theater of war or operations. These warnings describe the general state of the probable air threat and apply to the entire area.

## 8-22. REACTION PROCEDURES

Reaction procedures include both passive and active air defense measures.

a. **Passive Air Defense.** Passive air defense is the platoon's primary method for avoiding enemy air attack. Passive air defense consists of all measures taken to prevent the enemy from detecting or locating the unit, to minimize the target acquisition capability of enemy aircraft, and to limit damage to the unit if it comes under air attack. Target detection and acquisition are difficult for crews of high-performance aircraft, and the platoon can exploit this advantage. In most cases, enemy pilots must be able to see and identify a target before they can launch an attack.

(1) ***Guidelines.*** The platoon should follow these guidelines to avoid detection or limit damage if detected:

- When stopped, occupy positions that offer cover and concealment and dig in and camouflage vehicles that are exposed.
- When moving, use covered and concealed routes.
- Disperse vehicles as much as possible to make detection and attack more difficult.
- Wipe out track marks leading to vehicle positions and eliminate or cover the spoil from dug-in positions.
- If moving when an enemy aircraft attacks, disperse and seek covered and concealed positions.
- Do not fire on a hostile fixed-wing aircraft unless it is clear that the aircraft has identified friendly elements. Premature engagement compromises friendly positions.
- Designate air guards for every vehicle and position; establish and maintain 360-degree security.
- Establish an air warning system in the unit SOP, including both visual and audible signals.

(2) ***Procedures.*** When the platoon observes fixed-wing aircraft, helicopters, or UAVs that could influence its mission, it initially takes passive air defense measures unless the situation requires immediate active measures. Passive air defense measures normally means that each platoon initiates its React to Air Attack Battle Drill; however, the commander can initiate specific passive measures if necessary. Refer to the passive air defense guidelines for the company discussed earlier in this section.

**NOTE:** Passive air defense also includes the platoon's preparations for conducting active air defense measures.

Passive air defense involves these three steps:

- Step 1 - Alert the battalion with a contact report.
- Step 2 - Deploy or take the appropriate actions. If the battalion is not in the direct path of an attacking aircraft, the commander orders the companies to seek cover and concealment and halt with at least a 100-meter interval between vehicles. The platoon also may be ordered to continue moving as part of the battalion.
- Step 3 - Prepare to engage. Fighting vehicle crews prepare to engage the aircraft with machine gun or main gun fire on order of the commander or their platoon leader.

**b. Active Air Defense.** The platoon avoids engaging enemy aircraft if possible. If engagement is unavoidable, the platoon uses a technique known as volume of fire (Figure 8-23, page 8-36). This technique is based on the premise that the more bullets a unit can put in the sky, the greater the chance the enemy will fly into them. Even if these fires do not hit the enemy, a "wall of lead" in the sky can intimidate enemy pilots, causing them to break off their attack, or it can distract them from taking proper aim. One of the most important points about volume of fire is that once the lead distance is estimated, the soldier must aim at the estimated aiming point and fire at that single point until the aircraft has flown past it. The soldier maintains the aiming point, not the lead distance. Once the soldier starts firing, he does not adjust his weapon. The platoon leader establishes the aiming point based on the type of aircraft that is attacking (Figure 8-24, page 8-36).

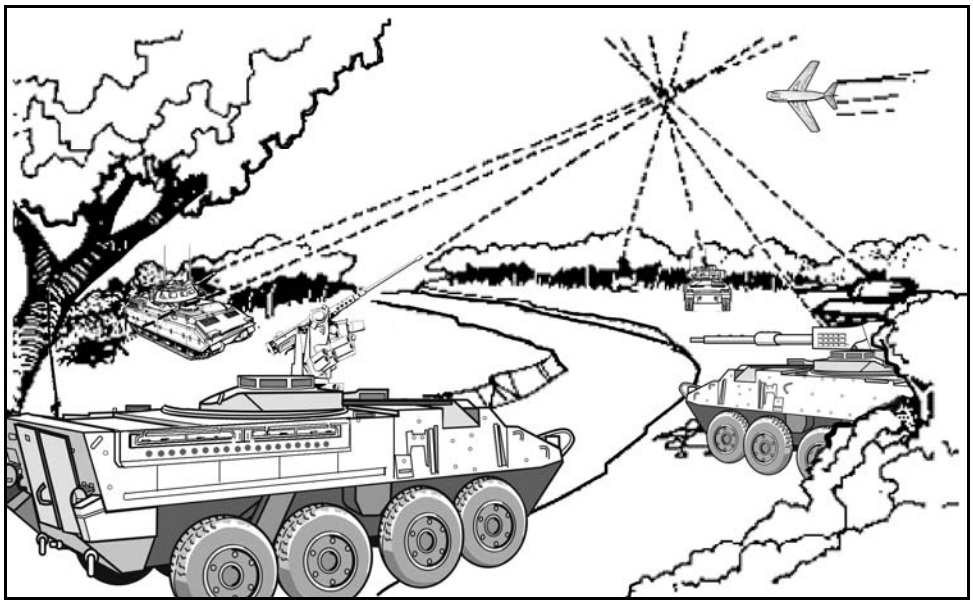
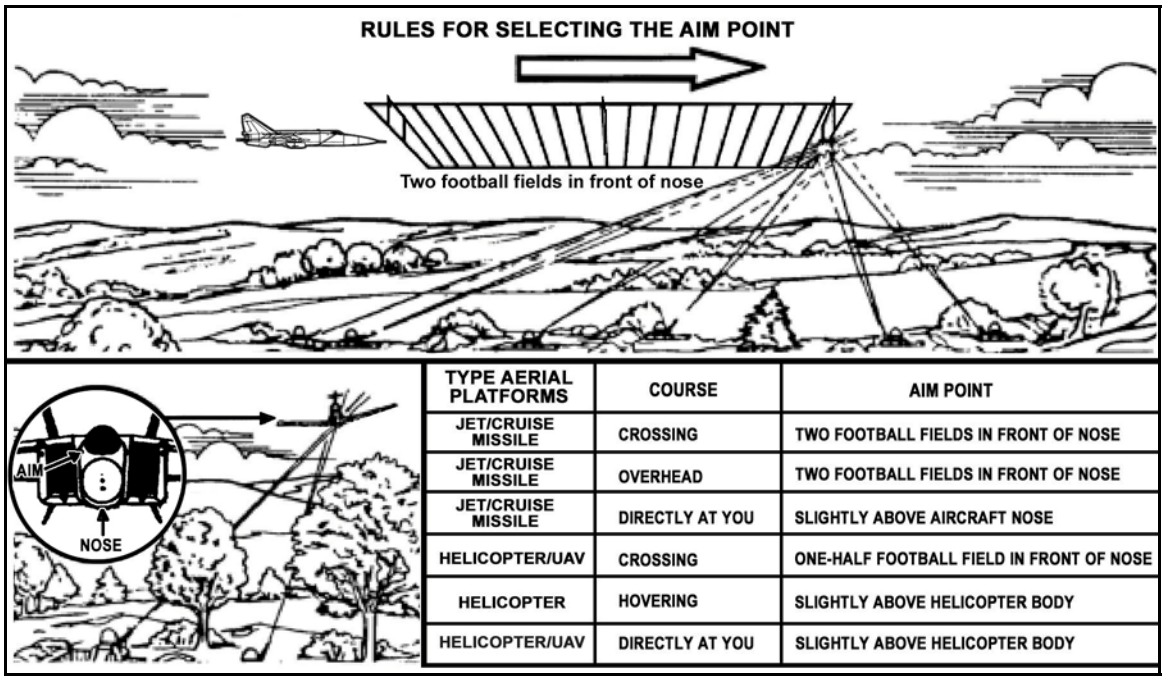


**Figure 8-23. Volume of fire.**




| TYPE AERIAL PLATFORMS | COURSE | AIM POINT |
|---|---|---|
| JET/CRUISE MISSILE | CROSSING | TWO FOOTBALL FIELDS IN FRONT OF NOSE |
| JET/CRUISE MISSILE | OVERHEAD | TWO FOOTBALL FIELDS IN FRONT OF NOSE |
| JET/CRUISE MISSILE | DIRECTLY AT YOU | SLIGHTLY ABOVE AIRCRAFT NOSE |
| HELICOPTER/UAV | CROSSING | ONE-HALF FOOTBALL FIELD IN FRONT OF NOSE |
| HELICOPTER | HOVERING | SLIGHTLY ABOVE HELICOPTER BODY |
| HELICOPTER/UAV | DIRECTLY AT YOU | SLIGHTLY ABOVE HELICOPTER BODY |

**Figure 8-24. Aim points.**

## Section V. NUCLEAR, BIOLOGICAL, AND CHEMICAL SUPPORT

NBC assets within the SBCT are limited; therefore, it is imperative that the platoon practices the fundamentals of NBC defense, avoidance, protection, and decontamination in order to survive on a contaminated battlefield.

### 8-23. RECONNAISSANCE SUPPORT

The NBC reconnaissance platoon organic to the cavalry squadron (RSTA) is the only internal NBC reconnaissance available to the SBCT. The NBC reconnaissance platoon can locate, identify, and mark areas of contamination. Since NBC reconnaissance assets are limited, the SBCT infantry reconnaissance platoon must plan for alternate means of conducting NBC reconnaissance.

### 8-24. DECONTAMINATION SUPPORT

For operational decontamination, the platoon must request support from the battalion's decontamination team, which is equipped with the modular decontamination system (MDS). Thorough decontamination operations require the support of an external decontamination platoon. (For a more detailed discussion of decontamination requirements, refer to FM 3-5.)